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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,813	10/20/2003	Richard Cooper	3060-3	4362

29941 7590 04/15/2004  
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EXAMINER

JEFFERY, JOHN A

ART UNIT PAPER NUMBER

3742

DATE MAILED: 04/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

### Application No.

10/689,813

### Applicant(s)

COOPER ET AL.

### Examiner

John A. Jeffery

### Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-32 and 34 is/are rejected.
- 7) ☒ Claim(s) 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 October 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)             | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. ____.  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____.   | 6) <input type="checkbox"/> Other: ____.                                    |

## DETAILED ACTION

### *Abstract*

The abstract of the disclosure is objected to because it must briefly describe the air moving device. Correction is required. See MPEP § 608.01(b).

### *Drawing Objections*

(1) The drawings are objected to because Figs. 3A, 3B, and 4-7C all are too dark to reasonably and legibly be reproduced in a published patent document. Applicant must redraw these figures to ensure the structure is legible.

(2) The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, **the insulative film formed on the substrate as claimed in claim 2** must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### *Claimed Subject Matter Not in Specification*

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP 608.01(o). Correction of the following is required: The insulative substrate including an insulating film as claimed in claim 2 must be (1) described in the specification, and (2) specifically referred to by

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reference numeral(s) in the drawings as amended in accordance with the drawing objection above. To clearly show this feature, applicant must add a cross-sectional figure with proper insulative hatching. Applicant is cautioned against the inclusion of new matter.

***Claim Rejections - 35 U.S.C. § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13, 14, 19-22, 25, and 26 are rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. No antecedent basis exists for "the housing."

***Claim Rejections - 35 U.S.C. § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 13, 15, 17, 23, 25, 16, 18, 24, and 27 are rejected under 35 USC 102(e) as being anticipated by Park (US 2003/0116559). Park (US 2003/0116559) discloses a heater comprising insulative substrates in the form of tubes 24 in Figs. 3

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and 4 and thin film electric heater coatings 26 deposited on the tubes. Fan 35 moves air thereacross. See Paras. 0032-0033.

In another embodiment, the insulative substrate comprises plates 12 each coated with thin film electric heaters 14. See Figs. 1 and 2. Air is moved thereacross by fan 18. See Para. 0031.

### ***Joint Inventors -- Common Ownership Presumed***

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103, the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligations under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103.

### ***Claim Rejections - 35 U.S.C. § 103(a)***

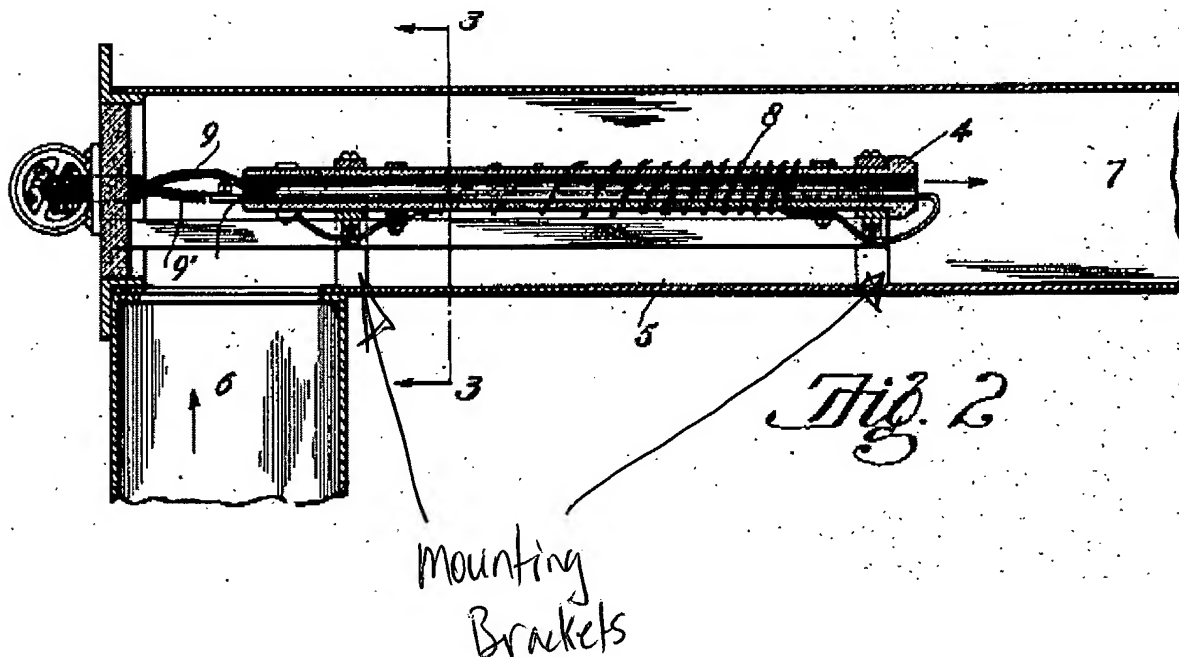
The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

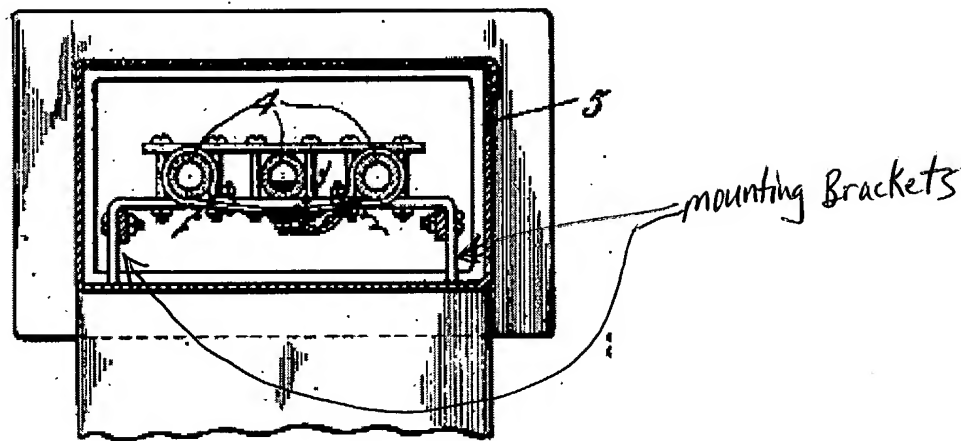
Subject matter developed by another person, which qualifies as prior art only under subsection (f) and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the

claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Claims 4-8, 11, 12, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Burger (US 1,491,194). The claims differ from the previously cited prior art in calling for the housing to have one mounting bracket protruding from an inner surface of the housing and the tubes to be mounted in the mounting bracket. Providing a surrounding housing for a tubular heating element and providing a protruding mounting bracket from the inner housing surface is conventional and well known in the art as evidenced by Burger (US 1,491,194) noting surrounding housing 5 and unlabelled mounting brackets that protrude from the housing's inner surface. Figs. 2 and 3 of Burger (US 1,491,194) are reproduced below to clearly show the mounting brackets.



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As shown in Burger (US 1,491,194), such an arrangement confines airflow to a defined volume dictated by the housing and centralizes the heater tubes within the housing. In view of Burger (US 1,491,194), it would have been obvious to one of ordinary skill in the art to provide a surrounding housing and mount the heater tubes in brackets protruding from the housing so that air to be heated is confined to a defined volume dictated by the housing and the heater is centralized within the airflow thus more uniformly heating the air.

Claims 9, 10, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Burger (US 1,491,194) and further in view of Bridges (US 1,490,088). The claims differ from the previously cited prior art in calling for a mounting bracket to be in communication with an electrical source and the connectors. Providing mounting brackets for electrical air heaters in communication with electrical sources is conventional and well known in the art as

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evidenced by Bridges (US 1,490,088) noting mounting bracket 32 that communicates with the heater connectors and electrical power. See Fig. 2. Such an arrangement facilitates prompt electrical connection with the electric heater and reduces apparatus parts by using the mounting bracket to also supply electric power to the heater. In view of Bridges (US 1,490,088), it would have been obvious to one of ordinary skill in the art to provide a mounting bracket that communicates with the heater connectors and electric power to facilitate prompt electrical connection with the electric heater and reduce apparatus parts by using the mounting bracket to also supply electric power to the heater.

Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of SU1560942. The claims differ from the previously cited prior art in calling for concentric tubes and at least one conical tube. But providing concentric, conical electric heaters in electric heaters is conventional and well known in the art as evidenced by SU1560942 noting concentric conical electric heaters in Fig. 4. Such an arrangement enables increased air heating by using multiple heaters in a minimum space by nesting the heaters within each other. Moreover, the heaters' conical shape tapers the heating intensity along the length of the housing. In view of SU1560942, it would have been obvious to one of ordinary skill in the art to provide concentric conical heaters in the previously described apparatus to (1) increase air heating by using multiple heaters in a minimum space by nesting the heaters within each other, and (2) taper the heating intensity along the length of the housing.



Claims 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Ball et al (US 1,982,190). The claims differ from the previously cited prior art in calling for the tube to be perpendicular to the airflow direction. Mounting heater tubes perpendicular to airflow in an electric convection heater is conventional and well known in the art as evidenced by Ball et al (US 1,982,190) noting heater tubes 14 perpendicular to the airflow direction. See Fig. 1 and 2. Such an arrangement reduces the length of the housing by vertically mounting the heater tubes. In view of Ball et al (US 1,982,190), it would have been obvious to one of ordinary skill in the art to mount the heater tubes perpendicular to the airflow in the previously described apparatus to reduce the length of the housing.

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Thornburg (US 4,056,823). The claim differs from the previously cited prior art in calling for a trapezoidal film. Providing a trapezoidal heating film on a plate substrate is conventional and well known in the art as evidenced by Thornburg (US 4,056,823) noting trapezoidal film 1 in Fig. 1. Such a tapered shape enables the amount of heat to be varied along the substrate. In view of Thornburg (US 4,056,823), it would have been obvious to one of ordinary skill in the art to provide a trapezoidal shaped heater in the previously described apparatus to vary the amount of heat along the substrate.

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Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Karey et al (US 4,757,183). The claim differs from the previously cited prior art in calling for the thin film to be formed by a CVD or PVD process. Although the patentability of a product does not depend on its method of production, *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted), depositing thin films via deposition processes is nevertheless well known in the art. Karey et al (US 4,757,183), for example, discloses a vapor-deposited electric heating film in an air heater with a conical cross section. See Fig. 4. PVD and CVD techniques enable the deposition of layers with precisely-controlled thicknesses. In view of Karey et al (US 4,757,183), it would have been obvious to one of ordinary skill in the art to vapor deposit the thin film of the previously described apparatus to deposit the heater layers of the previously described apparatus via PVD or CVD so that the layers were deposited with precisely-controlled thicknesses.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Matcovich et al (US 4,315,128). The claims differ from the previously cited prior art in calling for a thick film. Providing thick films in lieu of thin films in electric heaters is conventional and well known in the art as evidenced by Matcovich et al (US 4,315,128) noting col. 4, lines 24-43 (distinguishing thick films from thin films). The greater thicknesses achieved with thick films provide a greater heating intensity. In view of Matcovich et al (US 4,315,128), it would have been obvious to one of ordinary skill in the art to deposit a thick film in the previously

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described apparatus to increase the heating intensity per unit area of the layer as needed.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Park (US 2003/0116559) in view of Cooper et al (US 6,376,816). The claim differs from the previously cited prior art in calling for the insulative substrate to include an insulative film formed on a substrate. But forming insulative films on substrates to insulate electric heater films from underlying electrically conductive substrates is conventional and well known in the art as evidenced by Cooper et al (US 6,376,816) noting col. 2, lines 62-68 who discloses such a film for a tubular gas heater having a film electric heating element. By first layering a non-conductive film before applying the heater layer, shorting is prevented. In view of Cooper et al (US 6,376,816), it would have been obvious to one of ordinary skill in the art to provide an insulative film in the previously described apparatus to prevent shorting if an underlying electrically conductive substrate is used.

#### ***Allowable Subject Matter***

Claim 33 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Other Pertinent Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant should (1) separately consider the art, and (2) consider the art together with the previously cited prior art for potential applicability under 35 U.S.C. §§ 102 or 103 when responding to this action.

US 816, JP 927, US 336, US 680, US 143, US 828 disclose electric air heaters with electric heating films. US 971, US 904 disclose tubular heaters mounted within housings relevant to the instant invention.

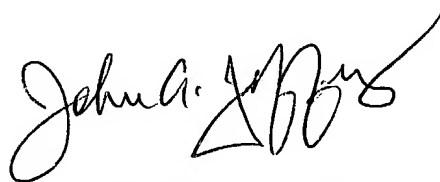
***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Jeffery whose telephone number is (703) 306-4601. The examiner can normally be reached on Monday - Thursday from 7:00 AM to 4:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise Pothier, can be reached on (703) 308-0993. All faxes should be sent to the centralized fax number at (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

A handwritten signature in black ink, appearing to read "John A. Jeffery", with a stylized flourish at the end.

**JOHN A. JEFFERY  
PRIMARY EXAMINER**

**4/14/04**